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## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 19 October 2000 (19.10.00)	<b>Applicant's or agent's file reference</b> JL2075
<b>International application No.</b> PCT/GB00/00953	<b>Priority date (day/month/year)</b> 17 March 1999 (17.03.99)
<b>International filing date (day/month/year)</b> 15 March 2000 (15.03.00)	
<b>Applicant</b> MUNDAY, Paul, David et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 20 September 2000 (20.09.00)

☐ in a notice effecting later election filed with the International Bureau on:  
 \_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  S. Mafla  Telephone No.: (41-22) 338.83.38
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## PCT INTERNATIONAL COOPERATION TREATY

9/936561

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

To:

BOWDERY, A., O.  
Qinetiq Limited  
IP Formalities  
A4 Bldg., Cody Technology Park  
Ively Road, Farnborough  
Hampshire GU14 0LX  
ROYAUME-UNI

Date of mailing (day/month/year)

02 November 2001 (02.11.01)

Applicant's or agent's file reference

JL2075

## IMPORTANT NOTIFICATION

International application No.

PCT/GB00/00953

International filing date (day/month/year)

15 March 2000 (15.03.00)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

THE RESEARCH OF STATE FOR DEFENCE  
Defence Evaluation and Research  
Agency  
Farnborough  
Hants GU14 0LX  
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

QINETIQ LIMITED  
85 Buckingham Gate  
London SW1 6TD  
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

The agent's address has been changed accordingly.

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned  
☐ the International Searching Authority ☒ the elected Offices concerned  
☐ the International Preliminary Examining Authority ☐ other:The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Idhir BRITEL

Telephone No.: (41-22) 338.83.38

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

# INTERNATIONAL SEARCH REPORT

Int. .tional Application No

PCT/GB 00/00953

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H03D9/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MITEQ INC: "MM- WAVE BLOCK CONVERTERS" MICROWAVE JOURNAL,US,HORIZON HOUSE. DEDHAM, vol. 39, no. 7, 1 July 1996 (1996-07-01), page 144,146,148,15 XP000679084 ISSN: 0192-6225 page 150, middle column; figure 5	1-4,7,10
X	WENGER J ET AL: "KA AND V-BAND MMIC COMPONENTS FOR PERSONAL COMMUNICATION NETWORKS" IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM DIGEST,US,NEW YORK, IEEE, 1996, pages 491-494, XP000731925 ISBN: 0-7803-3247-4 page 492, right-hand column	1

-/--

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "Z" document member of the same patent family

Date of the actual completion of the international search

27 June 2000

Date of mailing of the international search report

04/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer

Peeters, M

# INTERNATIONAL SEARCH REPORT

Int. Application No.

PCT/GB 00/00953

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>MAAS S A ET AL: "A BROADBAND, PLANAR, DOUBLY BALANCED MONOLITHIC KA-BAND DIODE MIXER"</p> <p>IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, US, IEEE INC. NEW YORK, vol. 41, no. 12, 1 December 1993 (1993-12-01), pages 2330-2335, XP000426152</p> <p>ISSN: 0018-9480</p> <p>abstract</p>	1,2
A	<p>MONDAL J ET AL: "KA-BAND MMIC RECEIVER WITH ION-IMPLANTED TECHNOLOGY FOR HIGH-VOLUME AND LOW-COST APPLICATION"</p> <p>IEEE MICROWAVE AND GUIDED WAVE LETTERS, US, IEEE INC, NEW YORK, vol. 1, no. 10, 1 October 1991 (1991-10-01), pages 278-281, XP000227277</p> <p>ISSN: 1051-8207</p> <p>abstract</p>	1
A	<p>DIEUDONNE J -M ET AL: "GAAS MESFET TECHNOLOGY BASED MMICS FOR MILLIMETRE-WAVE FRONT-ENDS"</p> <p>EUROPEAN MICROWAVE CONFERENCE PROCEEDINGS, GB, NEXUS BUSINESS COMMUNICATIONS, vol. CONF. 24, 1994, pages 534-541, XP000643208</p> <p>ISBN: 0-9518-0325-5</p> <p>page 535, paragraph 5</p> <p>page 536, paragraph 2</p>	4,15
A	<p>US 5 093 667 A (ANDRICOS CONSTANTINE)</p> <p>3 March 1992 (1992-03-03)</p> <p>column 6, line 39 - line 43</p>	5
A	<p>EP 0 495 598 A (RAYTHEON CO)</p> <p>22 July 1992 (1992-07-22)</p> <p>abstract; figure 2</p>	8
A	<p>KATO H ET AL: "A 30 GHZ-BAND FULL-MMIC RECEIVER FOR SATELLITE TRANSPONDERS"</p> <p>INTERNATIONAL MICROWAVE SYMPOSIUM, US, NEW YORK, IEEE, 1988, pages 565-568, XP000124768</p> <p>ISSN: 0149-645X</p> <p>page 566, right-hand column</p>	9
A	<p>EP 0 769 847 A (NIPPON ELECTRIC CO)</p> <p>23 April 1997 (1997-04-23)</p> <p>abstract</p>	9

-/-

# INTERNATIONAL SEARCH REPORT

Int. Application No

PCT/GB 00/00953

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 348 370 A (COMMUNICATIONS SATELLITE CORP) 27 December 1989 (1989-12-27) abstract; figure 3 -----	21,22

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. l. Application No

PCT/GB 00/00953

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5093667 A	03-03-1992	DE 4193486 T	15-07-1993
		GB 2258763 A,B	17-02-1993
		GB 2282291 A,B	29-03-1995
		WO 9216048 A	17-09-1992
EP 0495598 A	22-07-1992	DE 69224762 D	23-04-1998
		DE 69224762 T	08-10-1998
		ES 2113920 T	16-05-1998
		HK 1009663 A	04-06-1999
		JP 4310005 A	02-11-1992
		US 5127102 A	30-06-1992
EP 0769847 A	23-04-1997	JP 2914247 B	28-06-1999
		JP 9116340 A	02-05-1997
		AU 705500 B	27-05-1999
		AU 7020896 A	24-04-1997
		CA 2187967 A	18-04-1997
		CN 1151632 A	11-06-1997
		US 5742901 A	21-04-1998
EP 0348370 A	27-12-1989	US 5125109 A	23-06-1992
		AU 619557 B	30-01-1992
		AU 3597589 A	04-01-1990
		CA 1327643 A	08-03-1994
		DE 68908628 D	30-09-1993
		DE 68908628 T	07-04-1994
		DK 309389 A	24-12-1989
		IN 171705 A	19-12-1992
		JP 2044903 A	14-02-1990
		KR 9704773 B	03-04-1997
		NO 892605 A	27-12-1989



REC'D 02 APR 2001

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference JL2096	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB00/00953	International filing date (day/month/year) 15/03/2000	Priority date (day/month/year) 17/03/1999
International Patent Classification (IPC) or national classification and IPC H03D9/06		
Applicant THE SECRETARY OF STATE FOR DEFENCE ... et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 8 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  20/09/2000	Date of completion of this report  29.03.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Agerbaek, T  Telephone No. +49 89 2399 8692



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00953

## I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

### Description, pages:

1-21 as originally filed

### Claims, No.:

1-24 as originally filed

### Drawings, sheets:

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/00953

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-24
	No:	Claims	NONE
Inventive step (IS)	Yes:	Claims	NONE
	No:	Claims	1-24
Industrial applicability (IA)	Yes:	Claims	1-24
	No:	Claims	NONE

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00953

**Re Item I**

**Basis of the report**

The examination is being carried out on the **following application documents**:

Text for the Contracting States:

AT BE CH DE DK ES FI FR GB GR IT IE LI LU MC NL PT SE

**Description, pages:** 1-21 as originally filed

**Claims, No.:** 1-24 as originally filed

**Drawings, sheets:** 1/10-10/10 as originally filed

1. Reference is made to the following documents:

- D1: MITEQ INC: 'MM- WAVE BLOCK CONVERTERS' MICROWAVE JOURNAL,US,HORIZON HOUSE. DEDHAM, vol. 39, no. 7, 1 July 1996 (1996-07-01), page 144,146,148,15 XP000679084 ISSN: 0192-6225
- D2: WENGER J ET AL: 'KA AND V-BAND MMIC COMPONENTS FOR PERSONAL COMMUNICATION NETWORKS' IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM DIGEST,US,NEW YORK, IEEE, 1996, pages 491-494, XP000731925 ISBN: 0-7803-3247-4
- D3: MAAS S A ET AL: 'A BROADBAND, PLANAR, DOUBLY BALANCED MONOLITHIC KA-BAND DIODE MIXER' IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES,US,IEEE INC. NEW YORK, vol. 41, no. 12, 1 December 1993 (1993-12-01), pages 2330-2335, XP000426152 ISSN: 0018-9480
- D4: MONDAL J ET AL: 'KA-BAND MMIC RECEIVER WITH ION-IMPLANTED TECHNOLOGY FOR HIGH-VOLUME AND LOW-COST APPLICATION' IEEE MICROWAVE AND GUIDED WAVE LETTERS,US,IEEE INC, NEW YORK, vol. 1, no. 10, 1 October 1991 (1991-10-01), pages 278-281, XP000227277 ISSN: 1051-8207
- D5: DIEUDONNE J -M ET AL: 'GAAS MESFET TECHNOLOGY BASED MMICS FOR MILLIMETRE-WAVE FRONT-ENDS' EUROPEAN MICROWAVE CONFERENCE PROCEEDINGS,GB,NEXUS BUSINESS

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00953

COMMUNICATIONS, vol. CONF. 24, 1994, pages 534-541, XP000643208  
ISBN: 0-9518-0325-5

D6: US-A-5 093 667 (ANDRICOS CONSTANTINE) 3 March 1992 (1992-03-03)

D7: EP-A-0 495 598 (RAYTHEON CO) 22 July 1992 (1992-07-22)

D8: KATO H ET AL: 'A 30 GHZ-BAND FULL-MMIC RECEIVER FOR  
SATELLITE TRANSPONDERS' INTERNATIONAL MICROWAVE  
SYMPOSIUM,US,NEW YORK, IEEE, 1988, pages 565-568, XP000124768  
ISSN: 0149-645X

D9: EP-A-0 769 847 (NIPPON ELECTRIC CO) 23 April 1997 (1997-04-23)

D10: EP-A-0 348 370 (COMMUNICATIONS SATELLITE CORP) 27  
December 1989 (1989-12-27)

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2. Claims 1-24 claim a receiver - or an apparatus comprising such a receiver - by its unremarkable specifications and features. This is contrary to the purpose of patent laws, as can be inferred by considering Arts. 5 and 6 PCT in combination.
3. All the features claimed are commonly known or known from D1-D10, and the skilled reader will know their purposes and advantages and apply them whenever circumstances make it desirable.

For example, front ends for microwave signals are well known. One such is shown in D1, Fig. 5, showing typical functional blocks. The integration of one or more of these functions into a monolithic microwave integrated circuit (MMIC) is also well known. For example, D1 discusses, on p. 145, 2nd paragraph, the development of custom MMICs by foundry services, and mentions amplifier, mixer and multiplier blocks being integrated, l. 16-18.

D4 shows a MMIC receiver for 35GHz radar comprising an LNA and a mixer made on two chips, Fig. 1. As stated in col. 2, l. 8-11, however, the two chips may be integrated into a single chip receiver, as also evidenced by the fact that both

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00953

chips are made on the same wafer by the same process (see II. Fabrication).

D5 discloses different functional blocks that are made by the same process with the purpose of being integrated onto a single MMIC. As a target for integration is shown a monolithic front end for radar (Fig. 1) comprising a VCO, buffer for VCO, frequency doubler, mixer, IF amp, and T/R switch.

D10 shows a hybrid integrated antenna/LNB down-converter for satellite reception comprising a MMIC 114 with an LNA and a mixer (Fig. 3, col. 4, l. 5-7).

4. In accordance with the above, the application fails to meet the requirements of the PCT because claims 1-24 lack an inventive step, Art. 33 (3) PCT.  
A few examples of lack of an inventive step are given below.

4.1 [Example 1: Claim 1 lacks an inventive step, Art. 33(3) PCT]

D4 shows a MMIC receiver for 35GHz radar comprising an LNA and a mixer made on two chips, Fig. 1. As stated in col. 2, l. 8-11, however, the two chips may be integrated into a single chip receiver, as also evidenced by the fact that both chips are made on the same wafer by the same process (see II. Fabrication, col. 2).

The receiver of D4 differs from the receiver of claim 1 only in that it has different gains and noise figures (NF).

Subject to the clarity objection of point 8 of section VIII, this difference does not represent an inventive step, because the selection of a particular value or range of gain amounts to a simple choice. The skilled person would simply select these values according to circumstances without exercising an inventive step.

4.2 [Example 2: Claim 5 lacks an inventive step, Art. 33(3) PCT]

The feature of claim 5 of splitting up a signal into 0/90 degree signals for subsequent amplification and recombination is well known in the art of RF amplification. The skilled person would therefore incorporate such a known amplifier circuit into the receiver of D4 whenever circumstances made it desirable, e.g., when the improved performance of such a circuit was needed. Therefore

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00953

claim 5 lacks an inventive step

**4.3 [Example 3: Claims 21-24 lack an inventive step, Art. 33(3) PCT]**

Microwave frontends connected to antennas are common knowledge, they are found in every satellite TV reception system; also well known are such systems where the frontend is mounted on the antenna, and the antenna is movable to direct it to different satellites.

A Phased array using a plurality of frontends is well known, e.g., in the field of radar.

A high data rate communications system is a well known, e.g., from satellite communication systems.

What is claimed in claims 21 and 24 are primary fields of application of a receiver known from D4. A skilled person working in these fields would incorporate the receiver of D4 into the respective apparatuses or systems. The subject-matter of claims 21-24 therefore lacks an inventive step.

**4.4** For similar reasons, the remaining claims also fail to meet the requirements of the PCT for lack of an inventive step, Art. 33(3) PCT.

**5.** The application meets the requirements of the PCT with respect to industrial applicability, Art. 33(4) PCT, because the subject matter of claims 1-24 can be made or used in industry.

**Re Item VII**

**Certain defects in the international application**

- 6.** Contrary to the requirements of Rule 5.1(a)(ii) PCT, no relevant background art has been mentioned in the description.
- 7.** The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b)).

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00953

**Re Item VIII**

**Certain observations on the international application**

8. Claims 1, 2 and 4 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claims attempt to define the subject-matter in terms of the result to be achieved. More specifically, a claim to a specific value of gain, frequency range, or noise figure, or to a range of values does not further define the subject-matter. The technical features necessary for achieving this result should have been present.
9. Examiner is of the opinion that the application's contribution to the art is not of an extent and nature that could support a claim meeting the requirements of the PCT.  
More specifically, in the statement of invention no feature has been described as being essential to the invention, all features and specifications are preceded by the word 'preferably'. The only common feature - that one or more functions are integrated onto an MMIC - is well known in the art. What is described therefore amounts to simple juxtaposition. As the description thus does not clearly disclose an invention, it cannot support any claim.



INTERNET COOPERATION TREATY

**PCT**

**INTERNATIONAL SEARCH REPORT**

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>JL2075</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 00/ 00953</b>	International filing date (day/month/year) <b>15/03/2000</b>	(Earliest) Priority Date (day/month/year) <b>17/03/1999</b>
Applicant  <b>THE SECRETARY OF STATE FOR DEFENCE ... et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**ELECTROMAGNETIC WAVE RECEIVER FRONT END**

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1  
☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 00/00953

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H03D9/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MITEQ INC: "MM- WAVE BLOCK CONVERTERS" MICROWAVE JOURNAL, US, HORIZON HOUSE. DEDHAM, vol. 39, no. 7, 1 July 1996 (1996-07-01), page 144, 146, 148, 15 XP000679084 ISSN: 0192-6225 page 150, middle column; figure 5 ---	1-4, 7, 10
X	WENGER J ET AL: "KA AND V-BAND MMIC COMPONENTS FOR PERSONAL COMMUNICATION NETWORKS" IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM DIGEST, US, NEW YORK, IEEE, 1996, pages 491-494, XP000731925 ISBN: 0-7803-3247-4 page 492, right-hand column --- -/-	1

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

27 June 2000

Date of mailing of the international search report

04/07/2000

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 00/00953

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MAAS S A ET AL: "A BROADBAND, PLANAR, DOUBLY BALANCED MONOLITHIC KA-BAND DIODE MIXER" IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES,US,IEEE INC. NEW YORK, vol. 41, no. 12, 1 December 1993 (1993-12-01), pages 2330-2335, XP000426152 ISSN: 0018-9480 abstract	1,2
A	MONDAL J ET AL: "KA-BAND MMIC RECEIVER WITH ION-IMPLANTED TECHNOLOGY FOR HIGH-VOLUME AND LOW-COST APPLICATION" IEEE MICROWAVE AND GUIDED WAVE LETTERS,US,IEEE INC, NEW YORK, vol. 1, no. 10, 1 October 1991 (1991-10-01), pages 278-281, XP000227277 ISSN: 1051-8207 abstract	1
A	DIEUDONNE J -M ET AL: "GAAS MESFET TECHNOLOGY BASED MMICS FOR MILLIMETRE-WAVE FRONT-ENDS" EUROPEAN MICROWAVE CONFERENCE PROCEEDINGS,GB,NEXUS BUSINESS COMMUNICATIONS, vol. CONF. 24, 1994, pages 534-541, XP000643208 ISBN: 0-9518-0325-5 page 535, paragraph 5 page 536, paragraph 2	4,15
A	US 5 093 667 A (ANDRICOS CONSTANTINE) 3 March 1992 (1992-03-03) column 6, line 39 - line 43	5
A	EP 0 495 598 A (RAYTHEON CO) 22 July 1992 (1992-07-22) abstract; figure 2	8
A	KATO H ET AL: "A 30 GHZ-BAND FULL-MMIC RECEIVER FOR SATELLITE TRANSPONDERS" INTERNATIONAL MICROWAVE SYMPOSIUM,US,NEW YORK, IEEE, 1988, pages 565-568, XP000124768 ISSN: 0149-645X page 566, right-hand column	9
A	EP 0 769 847 A (NIPPON ELECTRIC CO) 23 April 1997 (1997-04-23) abstract	9

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 00/00953

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 348 370 A (COMMUNICATIONS SATELLITE CORP) 27 December 1989 (1989-12-27) abstract; figure 3 -----</p>	21,22

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Information on patent family members

International Application No

PCT/GB 00/00953

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